

## ABSTRACT

Identity recognition is very important in a security system because it requires a valid identification in purposes to controlling the security access. There are a lots of identity recognition techniques that have been used such as a password, PIN, ID card, and others. This technique possessed many weaknesses, which can be duplicated, stolen, forgotten or lost. Identity recognition techniques that are being developed now are biometric techniques. The purpose of biometric techniques is to identify an individual through the physical characteristics and behavior of that individual such as blood vessels of eye retina that are unique and not easily changed because it is located inside the eye.

In this final project will be designed a individual identification system through a pattern of retinal blood vessels. There are two stages to build the identification system, the first stage is modeling system and the second stage is testing system. In each stage of the process is the initial preprocessing, this process is done with the input of retina photos to get the grayscale image, then the feature extraction process is performed using Local Binary Pattern (LBP). The results of this process depends on the preprocessing. the process of identifying characteristic was conducted using K-Nearest Neighbor (K-NN).

The test results by applying the method of LBP as a method for extracting the feature from the image of the blood vessels and K-NN for the process of identification with the ratio of the data model and test data is 3: 2, the test is made by applying multiple testing scenario, changing the value of the neighborhood parameter (P), radius (R) in the LBP method, adjusting the size of the image, and change the parameter k in the K-NN method. Optimal configuration is obtained by using the 8 parameters on the number of neighborhood (P = 8), with a radius of 2 (R = 2), and 1 in the parameter k. performance systems capable of generating value reached 96.667% accuracy.

**Keyword:** Biometrics, blood vessel of retina, LBP, K-NN.